4½ DIGIT

Panel Instrument

Model 5413

MP MASTER
MA25738

Operation Manual

DATA TECH
A DIVISION OF PENRIL CORP.

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Model 5413

DATA TECH
A DIVISION OF PENRIL CORP.
2700 SOUTH FAIRVIEW STREET ■ SANTA ANA, CALIF. 92704

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WARRANTY

Within one year of delivery, we will repair or replace at our option your Data Tech product if any part of it is defective in material or workmanship. Labor is included. Just return the product to us freight prepaid.

MODEL 5413

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GENERAL DESCRIPTION

The DATA TECH Model 5413 is a 4½-Digit digital panel meter. Three voltage ranges are available, providing either ±2-volt, ±20-volt, or ±200-volt DC full scale. These units are available for operation from 100, 115, 220, and 230 volt AC, and 5 volt DC power source. See Table 1 for model and assembly numbers.

Table 1. 5413 Model Code

5413 — X X X

RANGE	POWER	OPTIONS
1 — 2V FS	0 — 5Vdc	0 — Standard
2 — 20V FS	1 — 100Vac	1 — Buffered BCD
3 — 200V FS	2 — 115Vac	
	3 — 220Vac	
	4 — 230Vac	

All Model 5413 assemblies include digital input-output lines for those wishing to obtain BCD data and control convert rate. An optional connector kit, part number 548387-100, includes a connector and fasteners for the input-output interface.

Special Modifications

Data Tech's design of the Model 5413 allows for the addition of many special features not available with standard units. Information on non-standard features is available from Data Tech and associated representatives.

Specifications

PERFORMANCE: After 5 minutes warm-up time, at 25 ±1°C unless otherwise specified.

Temperature Coefficient	(+10° to +40°C ambient)
Zero Drift	±1/10 Digit/°C max.
Full Scale	±40ppm/°C of reading max.
Accuracy	±(0.02% reading + 1 Digit)
Linearity	±1 Digit
Common Mode Rejection	>60dB at 50/60 Hz
Normal Mode Rejection	>34dB at 50 Hz
Step Response Time (to rated accuracy)	500mS + 1 conv cycle max.
Recommended Calibration Period	90 days
Input Bias Current	±7nA max.
Input Resistance	1000mΩ 2V 11MΩ 20V 10MΩ 200V
Maximum Input Voltage	300Vrms — 2V Meter 500V Peak — 20V, 200V Meter
*Common Mode Voltage	500Vdc or VAC max.

DISPLAY

Type	.43 in. Light Emitting Diode
Number of Digits	4½ Digits (19999 counts)
Range	±19999
Decimal Point	4 positions, externally selectable
Polarity	Automatic, plus & minus display
Overrange	MBS flashes at > ±19999

ENVIRONMENTAL

Storage Temperature	-25°C to 85°C
Operating Temperature	0°C to 50°C
Relative Humidity	80% max.

POWER

5Vdc	4.5V to 5.5V at 600mA nom.	
100Vac	90V to 110V	48 — 60 Hz
115Vac	103V to 127V	
220Vac	188V to 230V	
230Vac	216V to 260V	

*AC version only. DC version has direct connection between power ground and analog input low.

Power Consumption (without accessories)	A.C. Unit — 4W typ. D.C. Unit — 3W typ.
Power Available for Accessories	D.C. Model ±15V at 15 mA A.C. Model +5V at 50mA ±15V at 15mA
DIGITAL INTERFACE	
Cecimal Point Control Lines	7 TTL loads/line
Hold Input Load	1/3 TTL load
All Outputs — Drive Capability	4 TTL loads
Triggered Operation (hold line) pulse width	25mS minimum
GENERAL	
Conversion Time	20mS max.
Conversion Rate	3/sec factory set 30/sec max. rate
Clock Oscillator	5MHz
Converter Counting Rate	2.5MHz

INSTALLATION AND OPERATION

Mounting

The meter is designed for mounting in a 1.682 ±.010 by 3.924 ±.010 inch panel cutout. To mount, remove the mounting bracket, position the meter in the panel cutout, and replace the mounting bracket. Do not obstruct the vent slots on either side of the meter case. See Figure 2 for dimensions.

Wiring

Any of the following connectors are suitable for a J1 interface.

SAE Advanced Packaging — Type SAC18D/1-2
Greg Electronics — Type 81260-18DR1H
Data Tech — Part Number 531768-001
Elco — Type 00-6007-36-980-002
Cinch — Type 251-18-30-160

The connector fastens to the rear of the case using 7/16 inch long 4-20 self-tapping screws. See Figure 1.

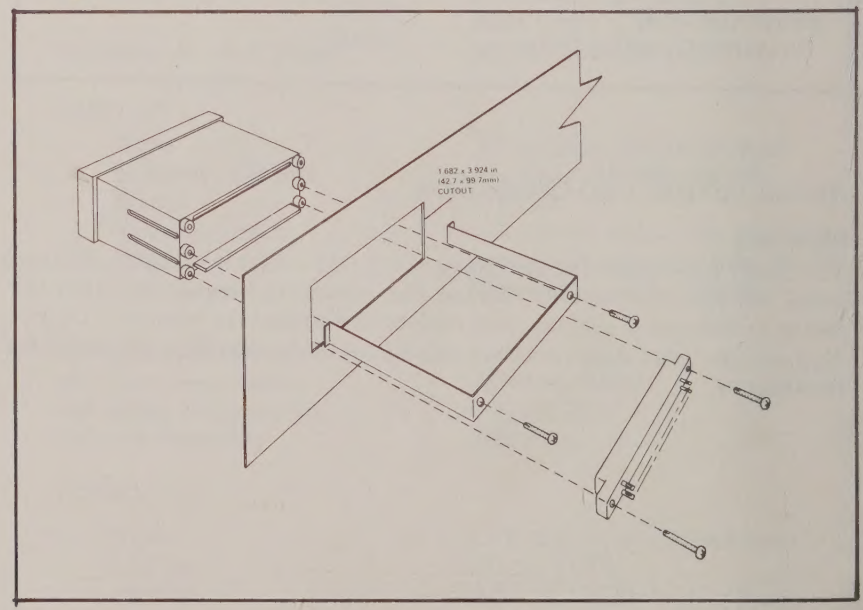

Figure 1. Mounting

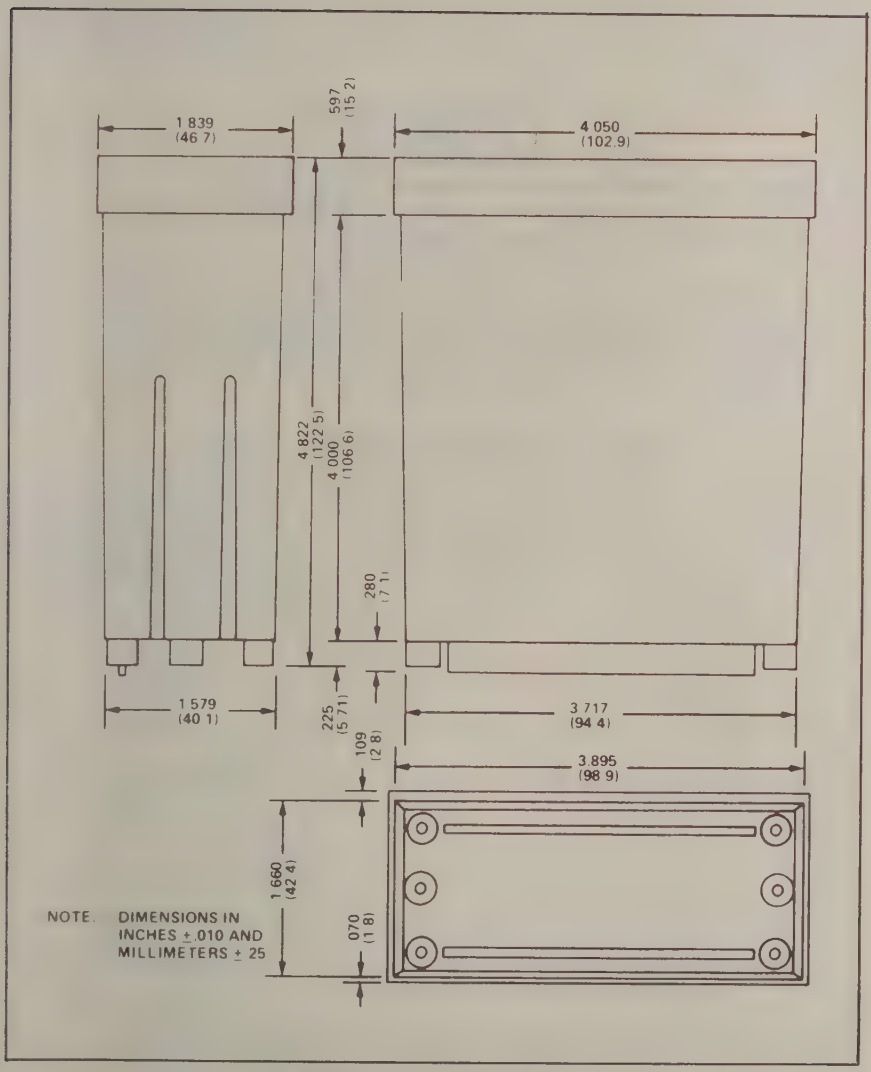

Figure 2. Dimensions

Using Table 2, connect the appropriate power; connect the source to be measured between ANALOG INPUT HIGH and LOW, and when applicable, establish the decimal point. If using BCD output, connect pin B to the system ground.

CAUTION

Pins A and B are internally connected together, therefore the analog circuit low side must not be at a different potential from the system ground, or damage may result.

If the leading "1" digit flashes, an overrange condition exists. Excessive overrange levels can cause damage to the meter. Remove the ANALOG INPUT and determine that any overrange level does not exceed ±300V. (±500V for 20 & 200V units)

Table 2. Input-output Pin Assignments

Pin	Signal	Pin	Signal
1	ANALOG INPUT (HI)	A	ANALOG INPUT (LOW)
2	8 BCD	B	DIGITAL GROUND
3	DP XXX.X	C	$\overline{\text{PRINT}}$
4	DP XX.XX	D	4 BCD
5	10 BCD	E	2 BCD
6	10,000 BCD	F	20 BCD
7	80 BCD	H	40 BCD
8	100 BCD	J	DP X.XXX
9	1 BCD	K	$\overline{\text{OVERRANGE}}$
10	800 BCD	L	DP .XXXX
11	1000 BCD	M	200 BCD
12	8000 BCD	N	400 BCD
13	4000 BCD	P	2000 BCD
14	POLARITY	R	$\overline{\text{HOLD}}$
15		S	
16	POWER IN (HI)* HOT	T	POWER IN (HI)*
17		U	
18	POWER IN (RTN)* NUT.	V	POWER IN (RTN)*

*PINS 16 & T are common
PINS 18 & V are common
For DC POWER HI = +5V
RTN = GND

Calibration

The accuracy of the meter should be established at 90-day intervals. Accuracy is confirmed when known inputs yield corresponding displays, within specified accuracy.

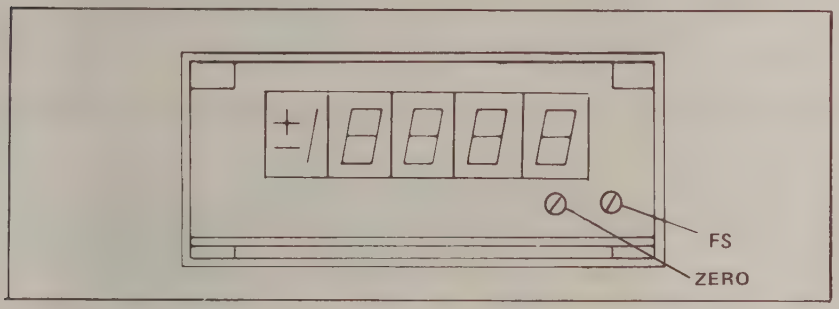

Figure 4. Calibration Adjustment Location

To calibrate, remove the display bezel by inserting a screwdriver in the slot located in the center of the bottom bezel edge. Free the associated retaining tab with a slight downward prying motion of the screwdriver handle. Pivot the lower bezel edge outward and upward for the complete removal. Calibrate as follows:

1. Short J1-A to J1-1 (0-volt ANALOG INPUT)
2. Adjust zero potentiometer for 0000 and toggling polarity display.
3. Apply a full scale (19999) input level in place of the short between J1-A and J1-1.
4. Adjust the full scale potentiometer for a 19999 display.
5. Replace the bezel by aligning the retaining tabs in front of their respective slots and pushing the bezel until the tabs snap in place.

NOTE

No further instructions are required when the digital input-output lines are not used. The unit begins operating upon receipt of the inputs prescribed under "wiring"; if not, refer to the warranty for proper action.

DIGITAL INPUT-OUTPUT LINES

The digital input and output lines are DTL and TTL compatible, with positive true logic levels as follows:

Logical "1" = +2.4 to +5.5 volts dc with prescribed loads

Logical "0" = 0 to 0.4 volts dc

Refer to specifications for specific line load capabilities and requirements.

BCD Output Lines (17)

The 17 lines labeled BCD in Table 2 provide binary coded decimal logic levels representative of the ANALOG INPUT. These lines carry valid data of the previous conversion when the $\overline{\text{PRINT}}$ line is a logical "0".

$\overline{\text{OVERRANGE}}$ Output Line

The $\overline{\text{OVERRANGE}}$ line is normally a logical "1". The line is a "0" for conversions yielding displays greater than ± 19999.

POLARITY (+) Output Line

The POLARITY (+) line is a logical "1" for negative ANALOG INPUT levels and a logical "0" for negative ANALOG INPUT levels.

PRINT Output Line (Figure 4)

The PRINT line is a logical "1" when the other DATA OUTPUT lines are updating due to a conversion process. The line is a logical "0" when the OUTPUT lines carry valid data. The duration of the "1" level is proportional to the input level.

HOLD ON COMMAND OPERATION

A "0" (GND) on J1-R initiates hold mode; whereby, conversions are terminated and BCD and display data corresponding to the last conversion remain stored. When hold mode is initiated during a conversion, the stored BCD and display data correspond to the conversion in progress.

An ungrounded (open) J1-R returns the unit to free-run mode.

EXTERNAL TRIGGER

Conversions may be controlled externally by the use of the HOLD line. In this mode of operation the HOLD line is kept at logical "0" and pulsed to logical "1" to initiate a conversion. The required pulse width is specified in the instrument specification section. The relative timing of the trigger pulse, conversion ramp, and $\overline{\text{PRINT}}$ signal is shown in Figure 4.

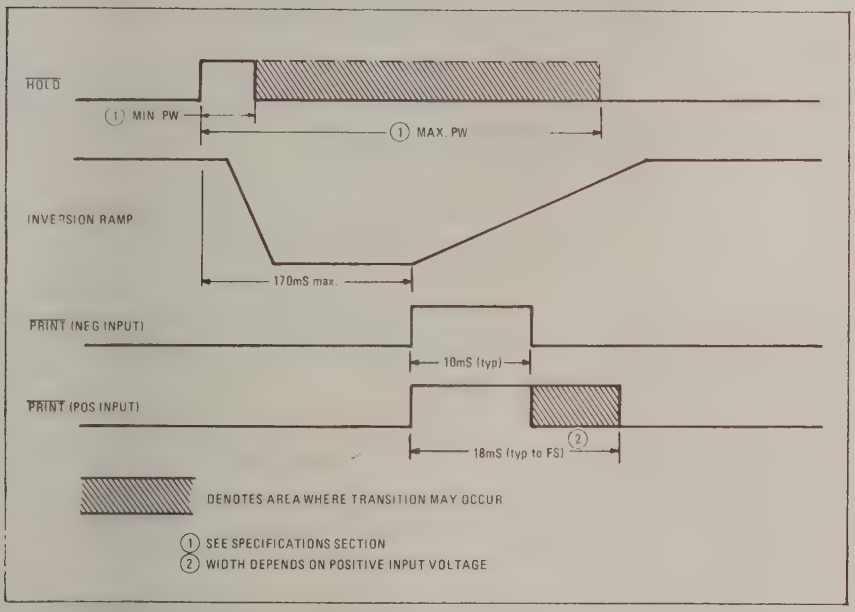

Figure 4. Timing

THEORY OF OPERATION

CONVERSION TECHNIQUE (Figure 5)

The analog-to-digital conversion is made by comparing the input levels to an integrating waveform. In case of negative inputs, when the integration voltage reaches the input level, clocking of a counter begins. This clocking is subsequently stopped when the integration voltage reaches 0 volts. The number of counts entered into the counter during the clocking interval is a digital representation of the analog input.

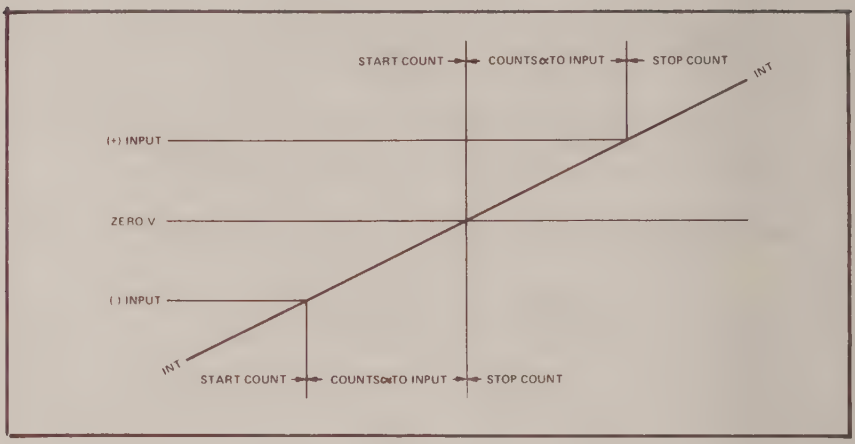

Figure 5. Conversion Technique

In the case of positive input levels, the clocking begins when the integration voltage reaches 0 volts and continues until the integration voltage reaches the input level. As with the negative case, the number of counts entered during clocking determines the digital output.

FUNCTIONAL BLOCK (Figure 6)

The conversion is started with the trigger signal; either generated externally or by the rate generator. The trigger causes a counter reset, and initiates the positive slope from the integrator.

Note that the comparators each receive the integration waveform as an input. In one case this waveform is compared to the input level. In the other case the waveform is compared to 0 volts.

The function of the clocking logic is to sense the outputs of the comparators and transmit clock pulses following the first comparator that changes state and terminate clocking when the other comparator changes state. Note that the order in which the comparators change state is determined by the input polarity. Polarity information is also gathered from this logic.

The number of clock pulses between the comparators changing state is entered into the counter. The counter yields BCD data, which is available on the output lines and decoded for the display.

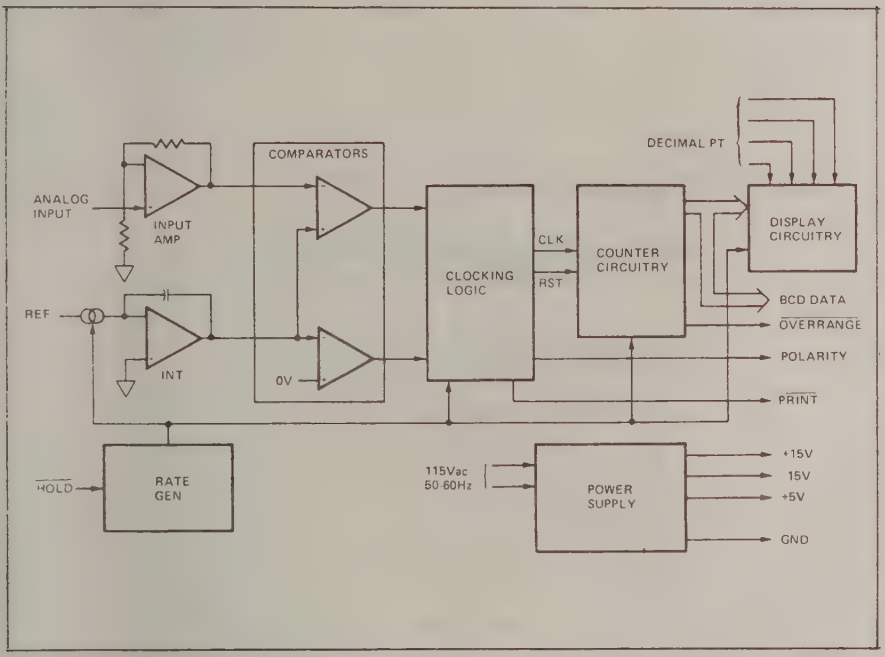

Figure 6. Functional Block Diagram

FACTORY REPAIR

Data Tech maintains a factory repair facility. Our trained technicians are available to repair your instruments with a minimum of inconvenience to you. Refer to the customer service card inside the back cover for equipment return instructions.

Model 5413 Engineering Drawings

This section contains schematics, and layout drawings for Model 5413 sub-assemblies.

549731	Schematic Diagram	(AC)
549739	Schematic Diagram	(DC)
549740	Mother Board Assy	(DC)
549741	Mother Board Assy	(AC)
549742	Display Board Assy	(AC/DC)
549671	Panel Meter Assy	(AC/DC)

549731

REVISIONS							
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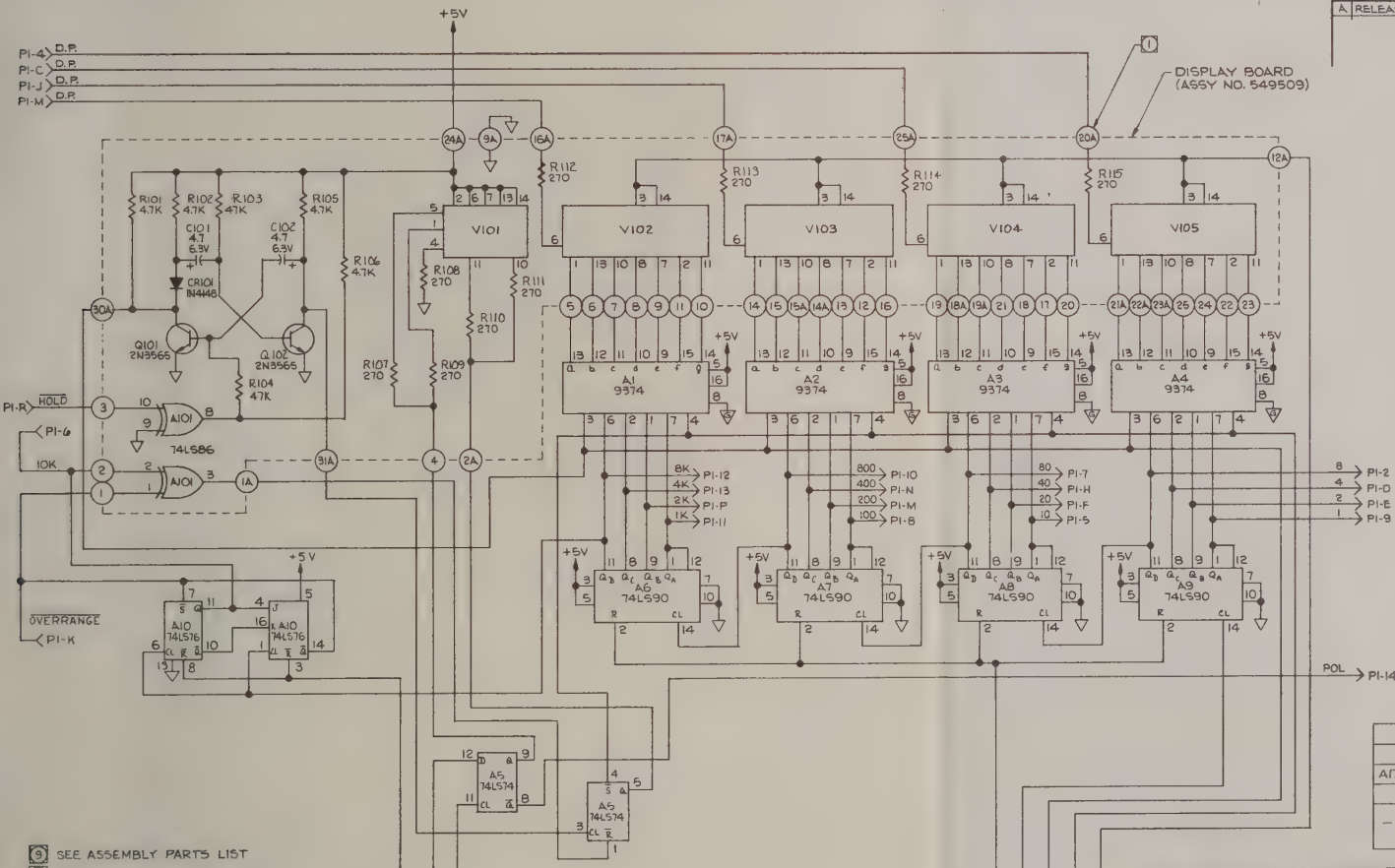

DISPLAY BOARD							
HIGHEST REFERENCE DESIGNATIONS							
A101	C102	CR101	R117	Q102	V105		
REFERENCE DESIGNATIONS NOT USED							
A1 THRU A100	C1 THRU C100	CR1 THRU CR100	R1 THRU R100	Q1 THRU Q100	V1 THRU V100		

MOTHER BOARD									
HIGHEST REFERENCE DESIGNATIONS									
A17	C13	CR14	CY1	P1	R21	T1		VR3	W2
REFERENCE DESIGNATIONS NOT USED									
—	—	CR5 CR6	—	-	R8	—	—	—	—

(3) SEE ASSEMBLY PARTS LIST
(8) VOLTAGE SELECT JUMPER
(7) FACTORY SELECTED VALUE
(6) R9 AND R10 IS A MATCHED SET
(5) CR4 AND R6 IS A MATCHED SET
4. PIN 7 IS GROUND, PIN 14 IS +5V FOR THE FOLLOWING I.C.'S: A5, A11, A12 & A101
3. CAPACITOR VALUES EXPRESSED IN MICROFARADS
2. RESISTOR VALUES EXPRESSED IN OHMS, ¼W, 5%
(1) (*) DENOTES DISPLAY BOARD CONTACT NO.

NOTES: UNLESS OTHERWISE SPECIFIED.

QTY REQD	PART OR IDENTIFYING NO	NOMENCLATURE OR DESCRIPTION	MATERIAL	DKT REF	ZONE	ITEM NO

LIST OF MATERIALS OR PARTS LIST

UNLESS OTHERWISE SPECIFIED
1 TOLERANCES ON
DECIMALS XX ± .03 XXX ± .010
ANGLES ± 0° 30'
2 BREAK SHARP CORNERS .005 MAX
FINISH

DRAWN	W. McGEE	11-19-67
CHECK	P. Shelton	12-14-67
APPR		12-15-67
APPR		

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NEXT ASSY 549741 & 549742

DATA TECH
A DIVISION OF PENRIL CORP.
2748 SOUTH FAIRVIEW STREET, SANTA ANA, CALIFORNIA 92704

SCHEMATIC DIAGRAM, MODEL 5413 AC POWER

CODE IDENT NO	SIZE		SCALE
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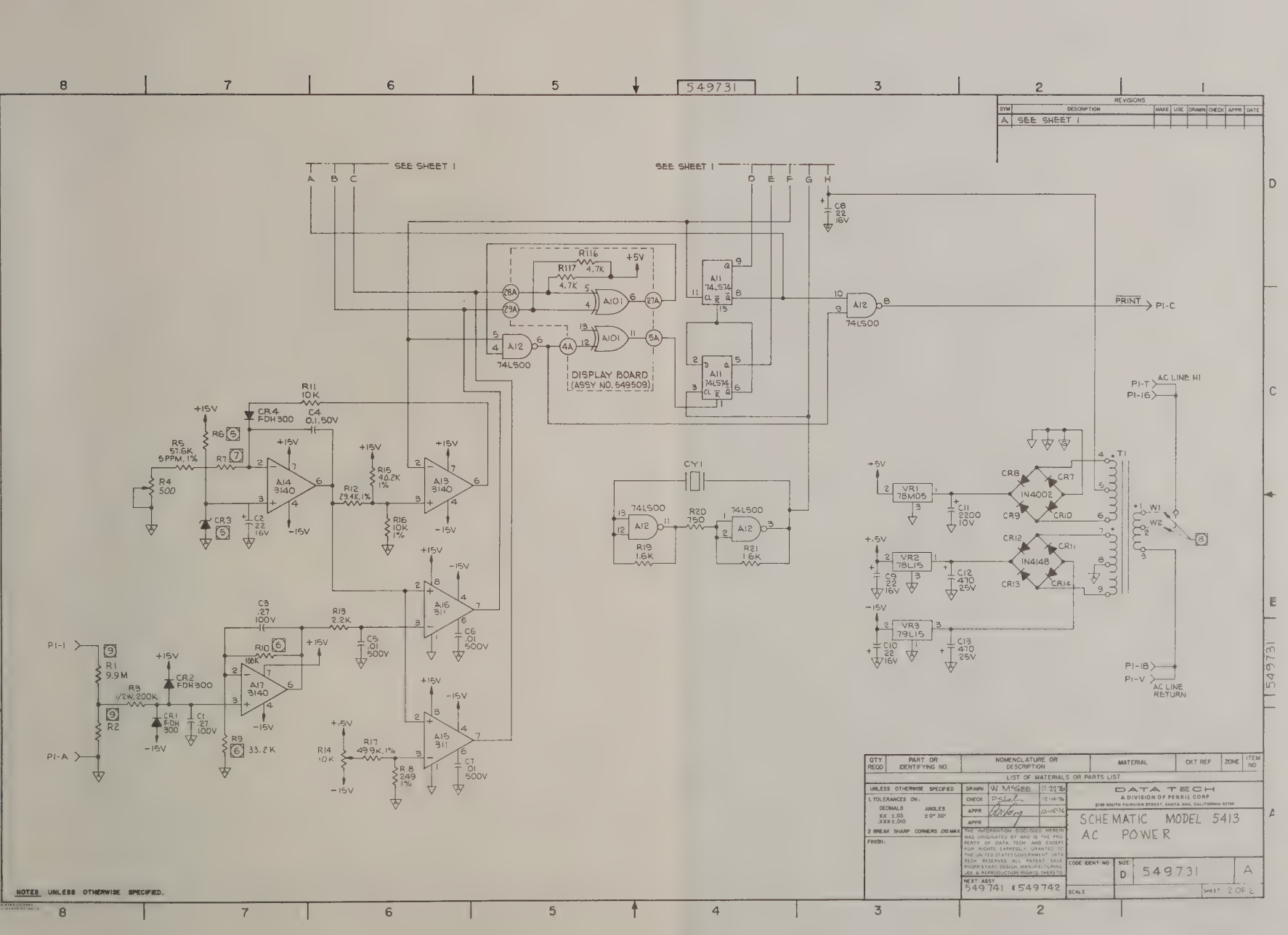
SHEET 1 OF 2


549731
REVISIONS
SYM DESCRIPTION MAKE USE DRAWN CHECK APPR DATE
A SEE SHEET 1
SEE SHEET 1
SEE SHEET 1
A B C
D E F G H
DISPLAY BOARD (ASSY NO. 549509)
R116
R117 4.7K
4.7K
+5V
A101
A12 74LS00
A11 74LS74
C8 22 16V
PRINT
P1-C
R11 10K
C4 0.1,50V
CR4 FDH300
+15V
-15V
R5 57.6K 5PPM, 1%
R6
R7
R4 500
A14 3140
R12 29.4K,1%
R15 40.2K 1%
R16 10K 1%
A13 3140
CR3
C2 22 16V
CY1
R19 1.6K
R20 750
R21 1.6K
P1-T
P1-16
AC LINE HI
T1
VR1 78M05
VR2 78L15
VR3 79L15
C11 2200 10V
C12 470 25V
C13 470 25V
C9 22 16V
C10 22 16V
CR8 CR7 CR9 CR10 IN4002
CR12 CR11 CR13 CR14 IN4148
W1
W2
P1-B
P1-V
AC LINE RETURN
C3 .27 100V
R13 2.2K
C5 .01 500V
C6 .01 500V
A16 311
R10 100K
A17 3140
P1-1
R1 9.9M
R2
R3 1/2W, 200K
CR2 FDH300
CR1 FDH 300
C1 .27 100V
R9 33.2K
P1-A
R14 10K
R17 499K,1%
R8 249 1%
A15 311
C7 .01 500V
NOTES. UNLESS OTHERWISE SPECIFIED.
QTY REQD PART OR IDENTIFYING NO. NOMENCLATURE OR DESCRIPTION MATERIAL CKT REF ZONE ITEM NO
LIST OF MATERIALS OR PARTS LIST
UNLESS OTHERWISE SPECIFIED
1. TOLERANCES ON:
DECIMALS XX ±.03 XXX ±.010
ANGLES ±0° 30'
2 BREAK SHARP CORNERS .015 MAX
FINISH:
DRAWN W McGEE 11-27-76
CHECK P Sch 12-14-76
APPR 12-15-76
APPR
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DATA TECH
A DIVISION OF PENRIL CORP
2138 SOUTH FAIRVIEW STREET, SANTA ANA, CALIFORNIA 92704
SCHEMATIC MODEL 5413
AC POWER
CODE IDENT NO
SIZE D
549731
A
SCALE
SHEET 2 OF 2

549739

REVISIONS							
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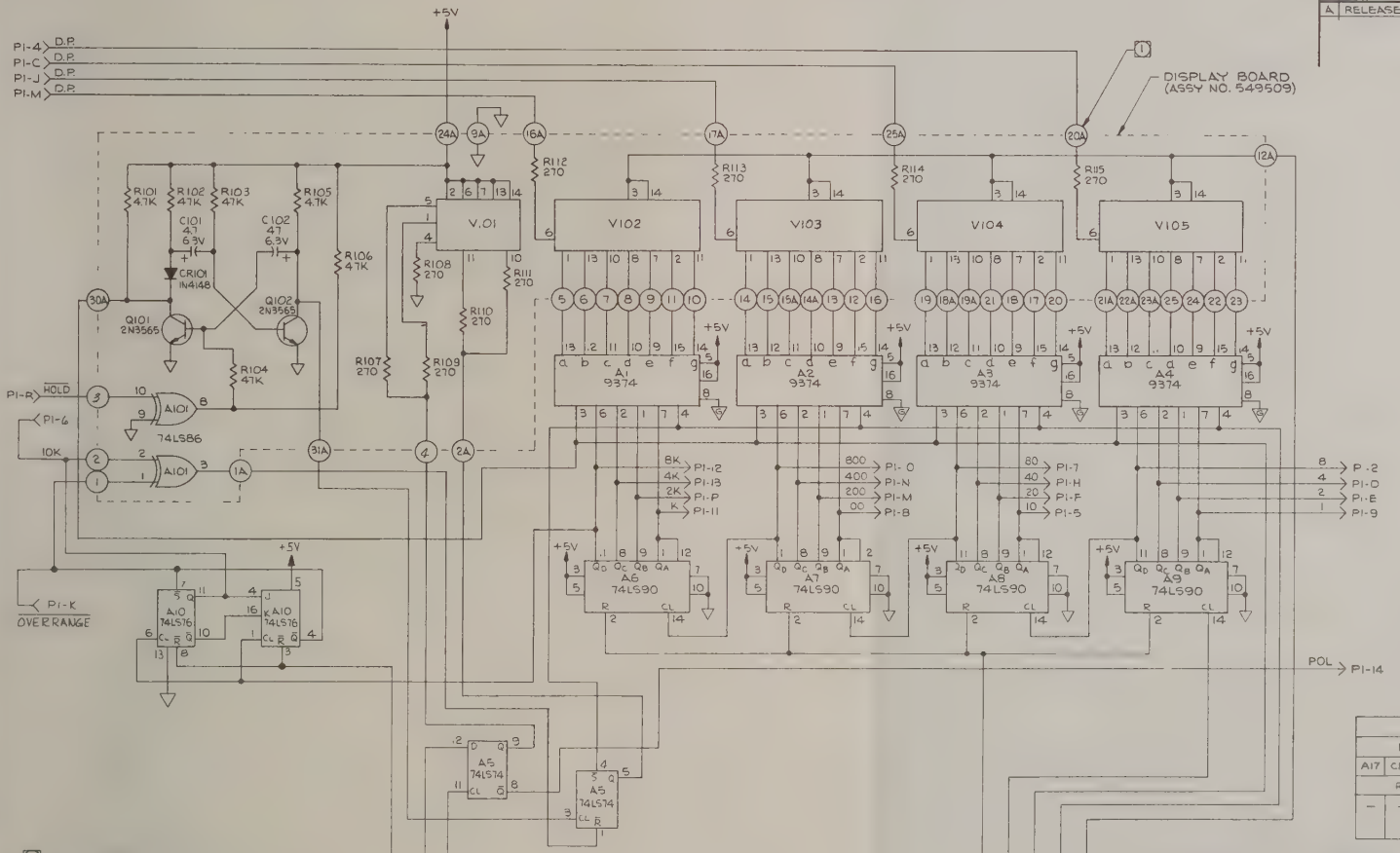

DISPLAY BOARD						
HIGHEST REFERENCE DESIGNATIONS						
A101	C102	CR101	R117	Q102	V105	
REFERENCE DESIGNATIONS NOT USED						
A1 THRU A100	C1 THRU C100	CR1 THRU CR100	R1 THRU R100	Q1 THRU Q100	V1 THRU V100	

MOTHER BOARD								
HIGHEST REFERENCE DESIGNATIONS								
A17	C14	CR16	CY1	P1	R23	T1	Q2	VR3	W4
REFERENCE DESIGNATIONS NOT USED								
—	—	CR1 THRU CR10	—	—	R8	—	—	VR1	—

6. SEE ASSEMBLY PARTS LIST
7. FACTORY SELECTED VALUE
6. R9 AND R10 IS A MATCHED SET
5. CR4 AND R6 IS A MATCHED SET
4. PIN 7 IS GROUND, PIN 14 IS +5V FOR THE FOLLOWING I.C.'S: A5, A11, A12 & A101
3. CAPACITOR VALUES EXPRESSED IN MICROFARADS
2. RESISTOR VALUES EXPRESSED IN OHMS, 1/4 W, 5%
1. (#) DENOTES DISPLAY BOARD CONTACT NO.

NOTES. UNLESS OTHERWISE SPECIFIED.

QTY REQD	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	MATERIAL	CKT REF	ZONE	ITEM NO
LIST OF MATERIALS OR PARTS LIST						

UNLESS OTHERWISE SPECIFIED
1 TOLERANCES ON:
DECIMALS .XX ±.03 .XXX ±.010
ANGLES ±0° 30'
2 BREAK SHARP CORNERS .015 MAX
FINISH

DRAWN	W. McGEE	11-19-76
CHECK		
APPR		
APPR		

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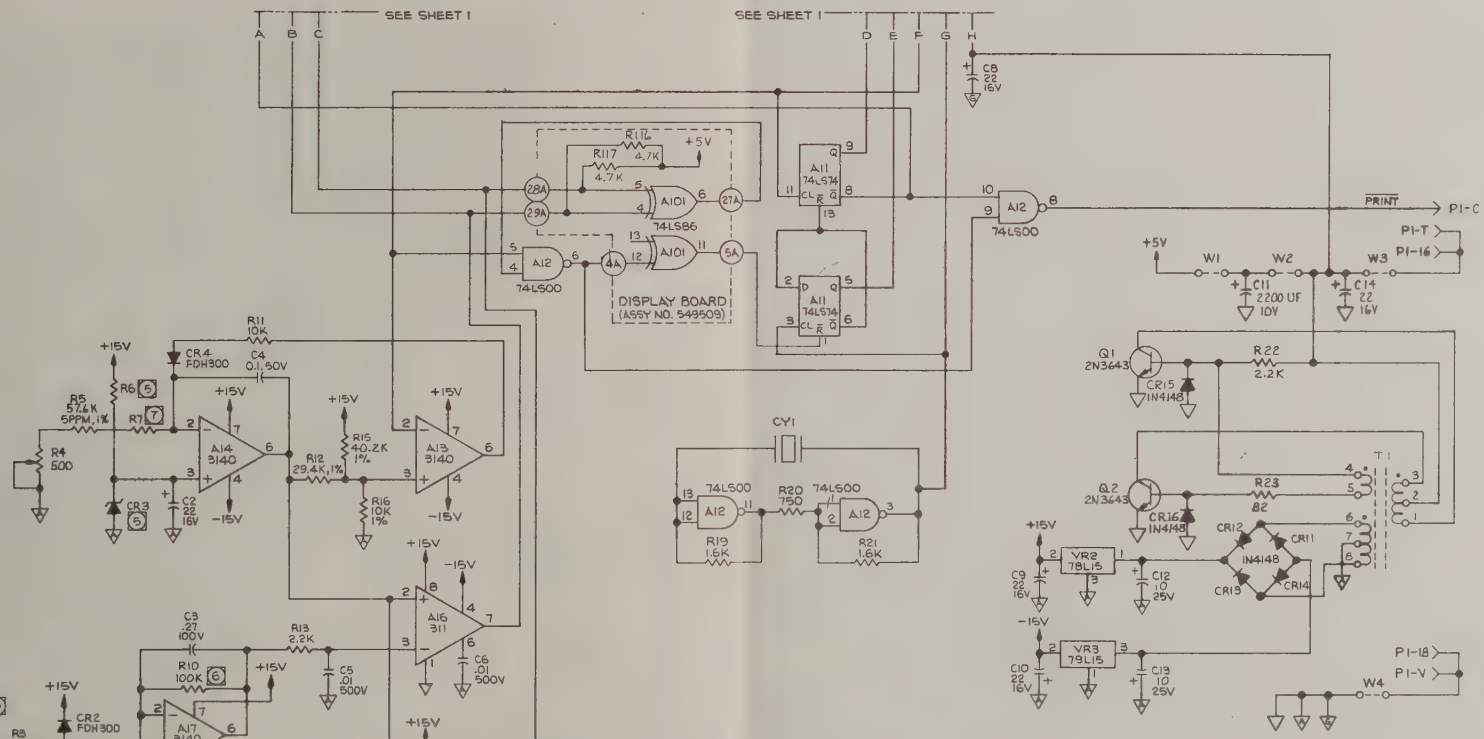
DATA TECH
A DIVISION OF PENRIL CORP
2100 SOUTH FAIRVIEW STREET, SANTA ANA, CALIFORNIA 92704

SCHEMATIC DIAGRAM, MODEL 5413 DC POWER

CODE IDENT NO	SIZE		
	D	549739	A
SCALE		SHEET	OF 2

549739

REVISIONS							
SYM	DESCRIPTION	MAKE	USE	DRAWN	CHECK	APPR	DATE
	SEE SHEET 1						



QTY REQD	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	MATERIAL	CKT REF	ZONE	ITEM NO
		LIST OF MATERIALS OR PARTS LIST				

UNLESS OTHERWISE SPECIFIED
1. TOLERANCES ON: DECIMALS XX ±.03 XXX ±.010; ANGLES ±0° 30'
2. BREAK SHARP CORNERS .015 MAX
FINISH

DRAWN	W. McGEE	11-22-76
CHECK	P Shuck	12-14-76
APPR		
APPR		

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2190 SOUTH FAIRVIEW STREET SANTA ANA CALIFORNIA 92704

SCHEMATIC DIAGRAM, MODEL 5413 DC POWER

CODE IDENT NO	SIZE		
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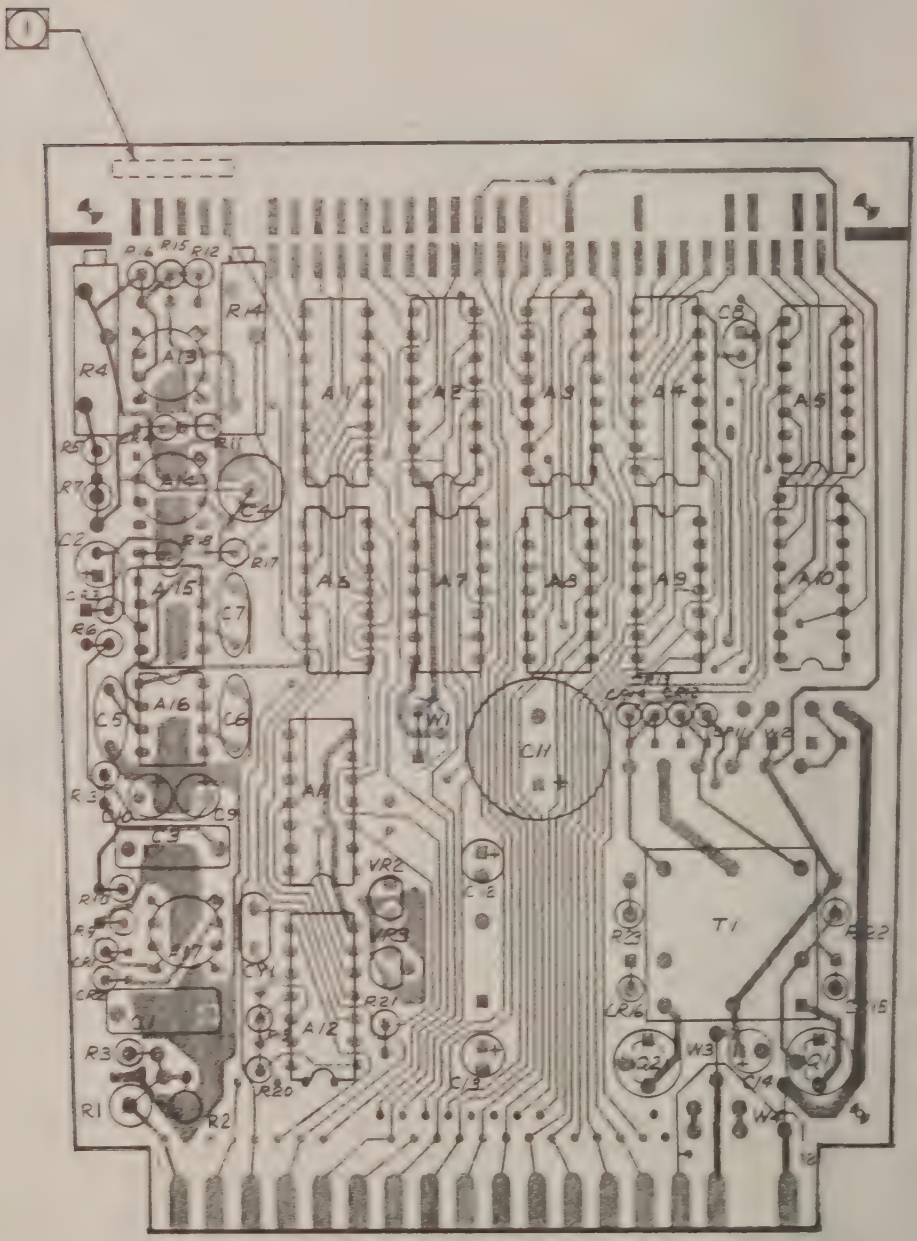
SCALE		SHEET 2 OF 2	

NOTES. UNLESS OTHERWISE SPECIFIED.



COMPONENT SIDE
-201 SHOWN

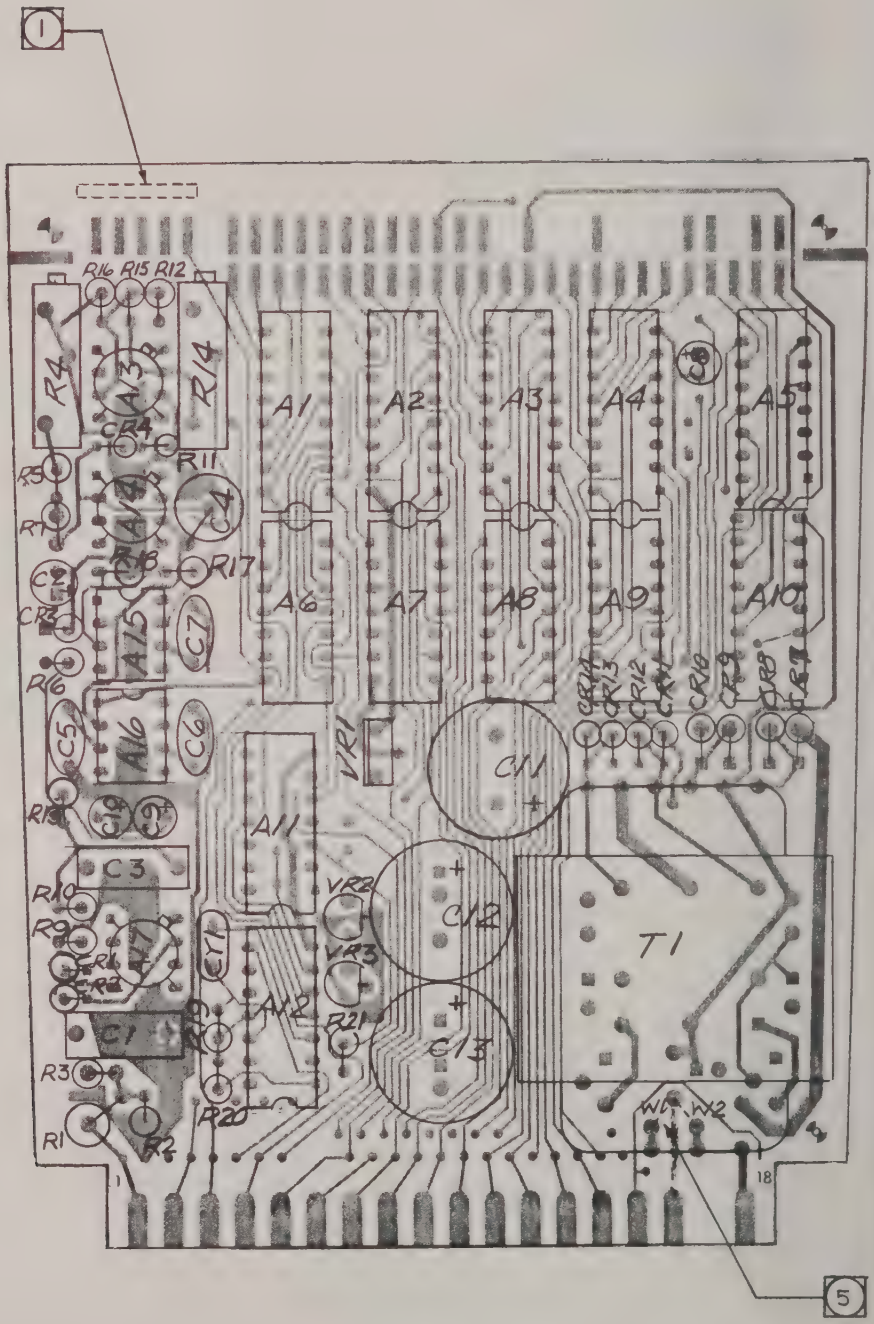
4. SQUARE PADS DENOTE THE FOLLOWING:
   I.C.'S - PIN 1
   DIODE - CATHODE END
   CAPACITOR - PLUS END
   TRANSISTOR - EMITTER

3. -200 IS CONTAINED IN EACH SUBSEQUENT DASH NO.

2. REFERENCE DOCUMENTS:
   SCHEMATIC DIAGRAM — 549739
   ENGINEERING SPEC — 549745
   "TEST" PROCEDURE — 549744

(1) IDENTIFY PER D.T. SPEC 505753

| | | |


1
R16 R15 R12
R14
R4
R13
CR4
R11
R5
R7
C4
R16
R17
C2
CR3
A15
C7
R6
A16
C6
C5
R8
C9
C3
R10
R9
R18
R19
CR1
C1
R3
R1
R2
R20
A11
VR1
A12
VR2
VR3
R21
C11
C12
C13
T1
A1
A2
A3
A4
A5
A6
A7
A8
A9
A10
CR14
CR13
CR12
CR11
CR10
CR9
CR8
W1
W2
18
5

5. INSTALL JUMPER ON SOLDER SIDE

4. SQUARE PADS DENOTE THE FOLLOWING:
   I.C.'S – PIN 1
   DIODE – CATHODE END
   CAPACITOR – PLUS END
   TRANSISTOR – EMITTER

3. -200 IS CONTAINED IN EACH SUBSEQUENT DASH NO.

2. REFERENCE DOCUMENTS:
   SCHEMATIC DIAGRAM – 549731
   ENGINEERING SPEC – 549745
   TEST PROCEDURE – 549744

1. IDENTIFY PER D.T. SPEC 505753

NOTES UNLESS OTHERWISE SPECIFIED.

QTY REQD	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	MATERIAL	CKT REF	ZONE	ITEM NO
		LIST OF MATERIALS OR PARTS LIST				
1	503048-024	JUMPER		W2		49
1	503048-024	JUMPER		W1		48
1	549676-002	TRANSFORMER, 230V		T		47
1	549676-001	TRANSFORMER, 115V		T1		46
1	532045-001	CRYSTAL, 5MHZ		CY1		45
4	820284-010	DIODE, 1N4148		CR11-CR14		44
3	531964-001	DIODE, FDH300		CR1,2,4		43
4	503582-005	DIODE, IN4004		CR7-CR10		42
						41
1	549664-200	ZENER SET		CR3, R6		40
						39
1	532338-001	RESISTOR SET, 100K(R10)-33.2K(R9)		R9, R10		38
1	531470-030	RESISTOR, 1%, 1.1M		R2		37
1	531985-006	1% 100K		R2		36
1	531986-001	1% 9.9M		R1		35
1	532318-001	RESISTOR, 5PPM, 1%, 57.6K		R5		34
1	531866-010	POTENTIOMETER, 10K		R14		33
1	531866-006	POTENTIOMETER, 500Ω		R4		32
1	503100-751	RESISTOR, 1/4W, 5%, 750Ω		R20		31
1	532050-135	1/4W 1%, 249Ω		R18		30
1	532050-420	49.9K		R17		29
1	532050-289	10K		R16		28
1	532050-411	40.2K		R15		27
1	532050-398	29.4K		R12		26
1	532050-999	1/4W 1% FSV - 5.9K NOMINAL)		R7		25
2	503100-162	1/4W, 5%, 1.6K		R19, R21		24
1	503100-222	1/4W, 5%, 2.2K		R13		23
1	503100-103	1/4W, 5%, 10K		R11		22
1	503101-104	1/2W, 5% 100K		R1		21
1	503101-104	RESISTOR, 1/2W, 5%, 100K		R3		20
1	532089-059	CAPACITOR, .047μF 250V		C1		19
2	532044-062	CAPACITOR, 470μF, 25V		C12, C13		18
1	532044-034	2200μF, 10V		C11		17
3	531338-073	.01μF, 500V		C5-C7		16
1	532307-001	.1μF, 50V		C4		15
4	532043-029	22μF, 16V		C2, C8-C10		14
1	532306-001	CAPACITOR, .27μF, 100V		C1		13
1	532306-001	CAPACITOR, .27μF 100V		C3		12
1	532317-002	I.C., VOLT REG, 79L15		VR3		11
1	532317-001	VOLT REG, 78L15		VR2		10
1	532303-001	VOLT REG, 78M05		VR1		9
2	532065-001	COMPARATOR, 311		A15, A16		8
3	532302-001	OP-AMP, 3140		A13 A14 A17		7
1	532305-003	DIGITAL, 74LS00		A12		6
1	532305-002	74LS76		A10		5
4	532305-005	74LS90		A6-A9		4
2	532305-001	DIGITAL, 74LS74		A5 A11		3
4	532304-001	I.C., DECODER, 9374		A1-A4		2
1	549410-001	PWB				1

QTY REQD	115V AC 60HZ	115V AC 50HZ	230V AC 60HZ	230V AC 50HZ
QTY REQD	2V	2V	2V	2V
QTY REQD	20V	20V	20V	20V
QTY REQD	22V	22V	22V	22V
QTY REQD	2V	2V	2V	2V
	115V AC		230V AC	
	5413-340	5413-240	5413-140	
	5413-330	5413-230	5413-130	
	5413-320	5413-220	5413-120	
	5413-310	54-13-210	5413-110	

UNLESS OTHERWISE SPECIFIED
1. TOLERANCES ON
DECIMALS ANGLES
.XX ± .03 ± 0° 30'
.XXX ± .010
2. BREAK SHARP CORNERS .08 MAX
FINISH

DRAWN W McGEE 11-17-76
CHECK 1-5-76
APPR 12-16-76
APPR

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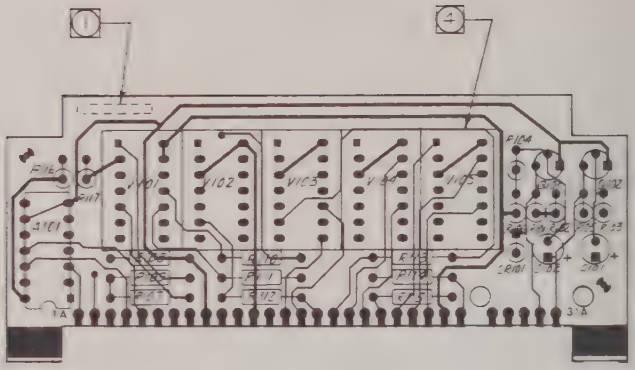
NEXT ASSY 549671

DATA TECH
A DIVISION OF PENRIL CORP
3700 SOUTH FAIRVIEW STREET, SANTA ANA, CALIFORNIA 92704

MOTHER BOARD ASSEMBLY
MODEL 5413
AC POWER

CODE IDENT NO. D | SIZE | 549741 | REV B
SCALE 2/1 | SHEET 1 OF 1



COMPONENT SIDE

4 SPACE V101-V105 0.1 IN. OFF BOARD

3. SQUARE PADS DENOTE THE FOLLOWING:
   I.C.'S - PIN 1
   DIODE - CATHODE END
   CAPACITOR - PLUS END
   TRANSISTOR - EMITTER

2. REFERENCE DOCUMENTS:
   SCHEMATIC DIAGRAM — 549739 OR 549731
   ENGINEERING SPEC — 549745
   TEST PROCEDURE — 549744

1 IDENTIFY PER D.T. SPEC 506758

QTY REQD	PART OR IDENTIFYING NO	NOMENCLATURE OR DESCRIPTION	MATERIAL	DWT REF	ZONE	ITEM NO
4	6300 P-002	LED DISPLAY HP5082-7750		V102-V105		3
	6300 P-003	LED DISPLAY HP5082-7756		V101		12
1	5810906-004	I.C. DIGITAL 74L88		A101		11
2	417818-000	TRANSISTOR 2N3565		Q101, Q102		9
	830084-000	DIODE IN4148		CR101		10
						8
2	532043-009	CAPACITOR 4.7UF, 6.3V, TANT		C101, C102		7
						6
6	501100-472	RESISTOR 1/4 W, 5%, 4.7K		R101, R102, R105 R106, R116, R117		5
2	501100-473	RESISTOR 1/4W, 5%, 47K		R103, R104		4
9	501100-271	RESISTOR 1/4W, 5%, 270Ω		R107-R115		3
						2
1	549609-001	PRINTED CIRCUIT BOARD				1

LIST OF MATERIALS OR PARTS LIST

UNLESS OTHERWISE SPECIFIED
TOLERANCES ON
DECIMALS .XX ±.03 .XXX ±.010
ANGLES ±2° 30'
2 BREAK SHARP CORNERS .015 MAX
FINISH

DRAWN R.C. Jones 11/6/74
CHECK P.D.T. 2-5-75
APPD [illegible] 2-5-75
APPD

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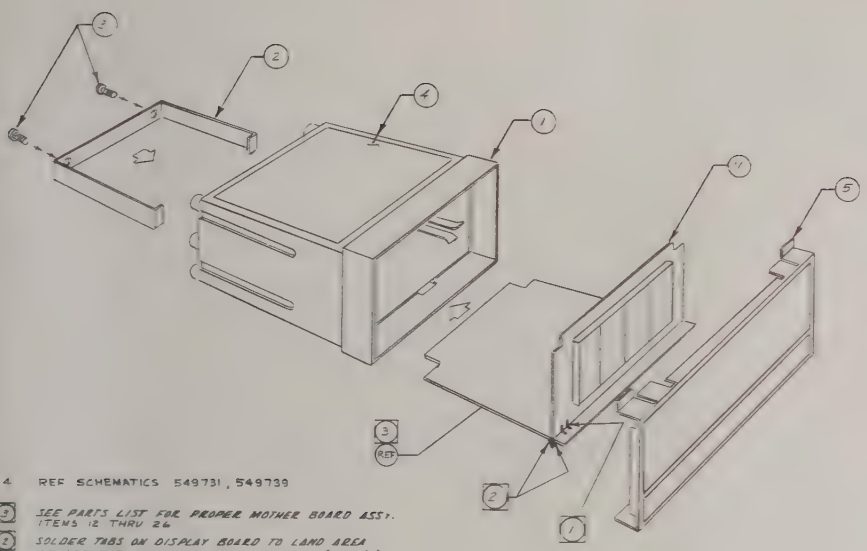
NEXT ASSY 549671

DATA TECH
A DIVISION OF PENRIL CORP
2788 SOUTH FAIRVIEW STREET SANTA ANA CALIFORNIA 92704

DISPLAY BOARD ASSY.
MODEL 5413

CODE IDENT NO | SIZE D | 549742 | REV A
SCALE 2:1 | SHEET 1 OF 1



4. REF SCHEMATICS 549731, 549739

(3) SEE PARTS LIST FOR PROPER MOTHER BOARD ASSY. ITEMS 12 THRU 26

(2) SOLDER TABS ON DISPLAY BOARD TO LAND AREA ADJACENT TO SLOTS ON MOTHER BOARD (4 PLC'S)

(1) SOLDER CONTACTS ON DISPLAY BOARD TO CONTACTS ON MOTHER BOARD 2 SIDES

PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	MATERIAL	QTY REQ	ZONE	ITEM NO.
549741-212	ASSY MOTHER BOARD				26
549741-211	▲ ▲ ▲				25
549741-210					24
549741-209					23
549741-208					22
549741-207					21
549741-206					20
549741-205					19
549741-204					18
549741-203					17
549741-202					16
549741-201					15
549740-203					14
549740-202	▼ ▼ ▼				13
549740-201	ASSY MOTHER BOARD				12
549743-200	ASSY DISPLAY				11
					10
548230-001	SHIPPING CONTAINER		REF		9
549743-001	MANUAL		REF		8
548456-001	DIMENSIONAL OUTLINE		REF		7
548387-100	CONNECTOR KIT		REF		6
548309-002	WINDOW READOUT		1		5
548329-001	SERIAL TAG		1		4
420227-003	SCREW 4-20 X 3/16 LG		2		3
548382-001	BRACKET PNL MTG		2		2
548303-001	CASE PANEL METER		1		1

LIST OF MATERIALS OR PARTS LIST

UNLESS OTHERWISE SPECIFIED
TOLERANCES IN
DECIMALS .XX ± .03 .XXX ± .010
ANGLES ± 1° 30'
SHARP CORNERS BREAK

DRAWN M. E. PRICE 5-8-73
CHECKED [illegible] 5-8-73
APPD [illegible] 5-8-73

DATA TECH
A DIVISION OF PERKIN-ELMER CORP
3760 SOUTH NORTHERN STREET, SANTA ANA, CALIFORNIA 92704

ASSEMBLY
PANEL METER
MODEL 5413

CODE IDENT NO. 0 | SIZE B | DWG NO. 549671 | REV E

SCALE NONE | SHEET 1 OF 1

NEXT ASSY

5413-300	549671-110
5413-290	549671-111
5413-280	549671-112
5413-270	549671-109
5413-260	549671-108
5413-250	549671-107
5413-240	549671-106
5413-230	549671-105
5413-220	549671-104
5413-210	549671-103
5413-200	549671-102
5413-190	549671-101
5413-180	549671-100

SPECIAL MODIFICATIONS

(To be filled in when units are modified)

Description of Modification(s)

Changes in Specified Operation(s)

Drawings applicable to Modification(s)

COMPLETE AND AFFIX THIS CARD TO AN ASSEMBLY BEING RETURNED TO THE FACTORY.

Send it to:

DATA TECH, 2700 South Fairview Street, Santa Ana, California 92704
Attention: Product Service

Equipment:

Model _____ Serial Number _____ Purchase Date _____

Original P/O Number _____ Repair P/O Number _____

REASON FOR RETURN/MALFUNCTION SYMPTOMS _____

_____

_____

After repair, please return this unit to:

_____

_____

_____

Bill non-warranty repairs to:

_____

_____

_____

Non-warranty repairs authorized if not to exceed $_____.

Authorized by _____ Telephone No. (___) _____

This card provides a means of expanding communications between DATA TECH and its customers. Entries aid DATA TECH in selecting programs which are consistant with customer requirements. Your efforts are, therefore, very much sought and appreciated.

Name _____ Address _____

City _____ State _____ Zip Code _____

Model _____ Repeat Customer: Yes _____ No _____

Delivery: Good ____ Satisfactory ____ Poor ____ Manual: Good ____ Satisfactory ____ Poor ____

Appearance: Attractive ____ Needs Improvement ____

Who/What introduced Data Technology: Rep ____ Ad ____ Other ____

Additional features desired: _____

_____

Best liked features: _____

Application: _____

_____

Comments/Suggestions: _____

_____

_____

_____

Enclose with return equipment

Do not mail separately

FIRST CLASS
PERMIT NO. 4314
SANTA ANA, CALIF.
92704

BUSINESS REPLY MAIL

No Postage Necessary If Mailed In The United States

Postage will be paid by:

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2700 South Fairview Avenue
Santa Ana, California 92704

Attention: **Marketing Services**

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MP MASTER

MA25738